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The Case of the Felted Wig

G. Blankenburg,¹ M. Guarrera² and A. Reborà²

¹Deutsches Wollforschungsinstitut an der Technischen Hochschule Aachen e.V., Aachen, Federal Republic of Germany, and ²Clinica Dermosifilopatica II, University of Genoa, Genoa, Italy

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Abstract. A sudden matting of hair after shampooing of a hairpiece is reported, which led the patient to a lawsuit. Chemical analyses showed that hairs were weathered and led to a possible explanation of the curious phenomenon.

Key words: Matting; Hairs; Shampoo

Matting of hair is known occasionally to follow the use of certain shampoos (1, 2, 3). However, felting

Table I

Amino acid	Root/ tip	Wig hair	Normal range
Cystine in %	Root Tip	14.1 14.6	approx. 16.8 (max) approx. 14.7 (min)
Cysteic acid in %	Root Tip	0.88 1.14	0.2-0.3 0.6-0.7
Cysteine (thiol) in %	Root Tip	0.32 0.37	0.20 0.35

of a hairpiece is quite unusual and the conditions in which such an event did in fact occur in our case, were not commonplace and may be of some interest.

CASE REPORT

A 55-year-old woman with a severe androgenic alopecia had a hairpiece surgically fixed to her scalp by means of Teflon-coated wire sutures. In the subsequent 10 months she had her wig shampooed periodically at the clinic where her "graft" had been performed. When for the first time she had her wig washed at a new clinic, she felt a sudden painful sensation on her scalp as though "the wig was being pulled off". So intense was the pain that the personnel had to remove the whole implantation. Legal action followed.

The patients showed us her wig, which looked like a rough mass of almost felted hairs, which was responsible for the distressing occurrence.

It was apparent that the hair had been treated in some way that caused it to felt. Accordingly, certain chemical and morphological investigations were planned.

MATERIALS AND METHODS

Since the bottle of the shampoo could have been confused with that of sodium thioglycollate, used for permanent waving, both the tip and the root portions of the hairs were studied as regards their thiol content (4).

To study the possible natural or artificial oxidizing degradation, the cystine and cysteic acid contents of the hydrolysed tip and root ends of hair were evaluated by means of an automatic amino-acid analyser (5).

Finally, hairs were embedded in glycerol and investigated by light microscopy.

RESULTS

The results of the chemical analyses are summarized in Table I.

Microscopically, a partial splitting off of the scales and other minor mechanical damage (Figs. 1-4) were observed in a great number of hairs.

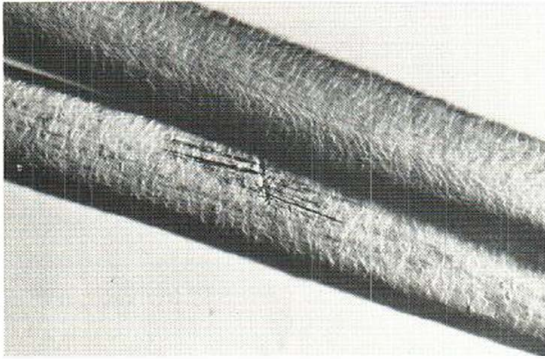


Fig. 1. Two hairs with a good scale structure, but with a cut in one of them.

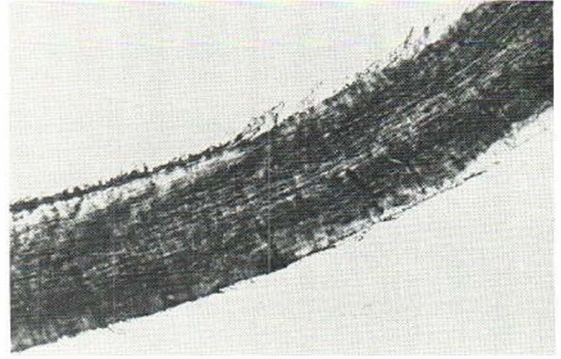


Fig. 3. A highly damaged hair. The scales are not lying close to the cortex, but are partly destroyed and the rest are splitting off.

COMMENT

The cysteine content was normal, indicating that the hair had not been treated with thioglycollate. On average, a rather low value (14.3%) of cystine was found (6), suggesting some impairment of the disulphide crosslinks that give the hair its stiffness. In sheep wool the reduction of cystine has been shown to favour felting (7).

The increase in cysteic acid content could be due either to an artificial oxidizing treatment such as bleaching, or dyeing, or to photochemical degradation by sunlight. In our case, since the wig did not appear to be bleached or dyed, hair weathering is the only explanation for the decrease in cystine and the increase in cysteic acid (6). The greater increase of the latter in the hair tips further supports this interpretation. In fact, photochemical degradation also occurs in "normal" hairs, but regular

haircuts remove the altered tips. Since wigs cannot be clipped, 2 to 3 years suffice to induce an irreversible damage.

The rupture of the disulphide linkages and the consequent loosening of the morphological structure induce an easier deformation of the hair and make it more wettable (7). All these factors cooperate in favouring felting as has been shown in sheeps wool (7).

In our case, shampooing precipitated felting in weathered hair whose sudden shrinking resulted in the pain the patient complained of.

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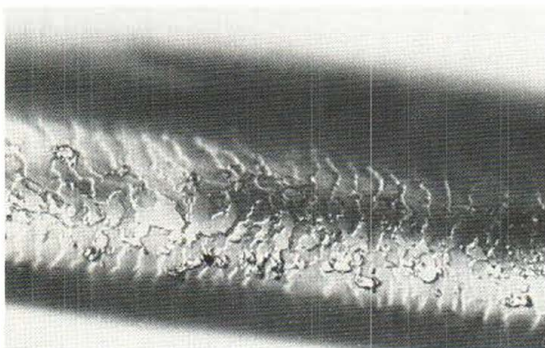


Fig. 2. A hair with some resin or polymer on the surface certainly due to the application of a hair spray.

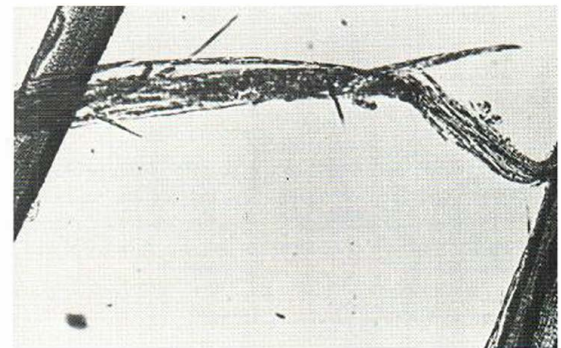


Fig. 4. A badly damaged hair, possibly due to mechanical action.

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Factitious Lymphoedema, Secretan's Syndrome

Jørgen Jørgensen,¹ Michala Gammeltoft²
and Henning Schmidt³

Departments of Dermatology, ¹The Finsen Institute, Copenhagen, ²Gentofte Hospital, Hellerup, and ³Odense University Hospital, Odense, Denmark

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Abstract. Chronic lymphoedema can be self-inflicted in origin. Many different procedures can produce such chronic oedema. Three probable cases of factitious oedema are reported.

Key words: Pathomimia; Factitious oedema; Chronic lymphoedema; Secretan's syndrome

Secretan was a Swiss insurance physician who in 1901 described 11 patients suffering from persistent hard oedema of the dorsum of the hand (15). He noticed that in all his patients the oedema developed secondarily to a trauma which was not severe enough to produce a fracture. Furthermore the patients were covered by insurance. Since then several similar cases have been demonstrated to be of self-inflicted origin.

The purpose of the present paper is to draw attention to the diagnosis factitious lymphoedema by presenting a further three cases and a short review of the literature.

Patient 1

A 35-year-old female developed secondarily to a minor trauma of her right knee chronic painless lymphoedema of her right lowerleg. Furthermore she had severe excoriations on her lower legs and forearms. By physical investigation the lymphoedema was seen to be sharply demarcated proximally just below the knee by a circumferential furrow with erythema and excoriations (Fig. 1). She had had neither erysipelas nor deep thrombophlebitis. Lymphography, thorax X-ray and urography were normal. It was not possible to perform phlebography. A psychiatric investigation concluded that she suffered from a neurosis characterogenes.

Following the application of an occlusive protective casting, the lymphoedema regressed markedly. When this treatment was interrupted, exacerbation was noticed, with lymphoedema recurring initially proximally just below the demarcation ring.

Patient 2

A 48-year-old female was admitted because of a chronic painless oedema of her right hand and dorsum of the right forearm of 3 years' duration. The lymphoedema started in connection with a stay in hospital because of backache and myoses. Because of the lymphoedema she had been admitted to departments of orthopedic surgery and blood vessel surgery, but no treatment was suggested. For 7 or 8 years she had also had moderate eczema on her palms. Patch tests for chromate and nickel proved positive. A peroral provocation test with nickel chloride, 1 and 2 mg, proved negative. She had never had erysipelas or thrombophlebitis. For many years she had suffered from a paranoid psychosis and was treated with Perfenazine (Trilafone®, Schering), Chlorpromazine (Prozil®, Dumex) and Lysantine (GEA).

It was not possible to perform phlebography or lymphography. Mammography showed fibroadenomatosis bilateralis, which was also noticed at the physical examination. No lymph nodes could be palpated in her axillae.

Patient 3

A 32-year-old female was observed for 6 years, initially because of dyshidrotic eczema of her third left finger, subsequently also including the palms. An attack of lymphangitis of her left arm had been treated with Penicillin. During the last 5 years she has suffered from a constant, painless oedema of her left hand, dorsa of the fingers and the distal part of her forearm. Treatments with mitella, prednisone perorally and a protective plaster casting have been ineffective. Investigations for malignant tumours have been negative. Automutilation and referral to a psychiatric department have been mentioned to the patient but caused great aversion on her part. She is probably slightly mentally retarded. She has been awarded an invalidity pension.

DISCUSSION

In his paper in 1901, Secretan did not suggest a self-induced injury as the cause of the disease (15).